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# Asymmetric Allylic Alkylation

Literature Seminar  
Carl Christoph Tzschucke  
Friday, March 30<sup>th</sup> 2001

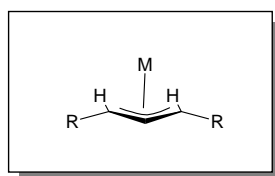
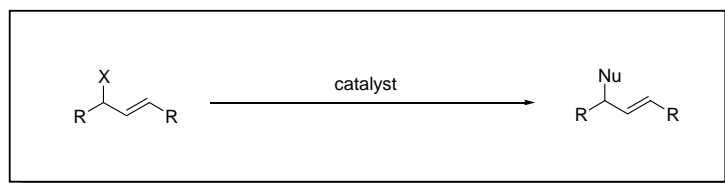
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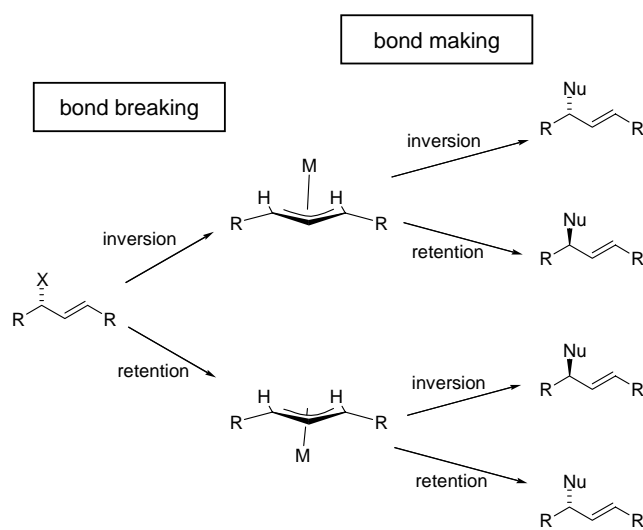
# Allylic Alkylation



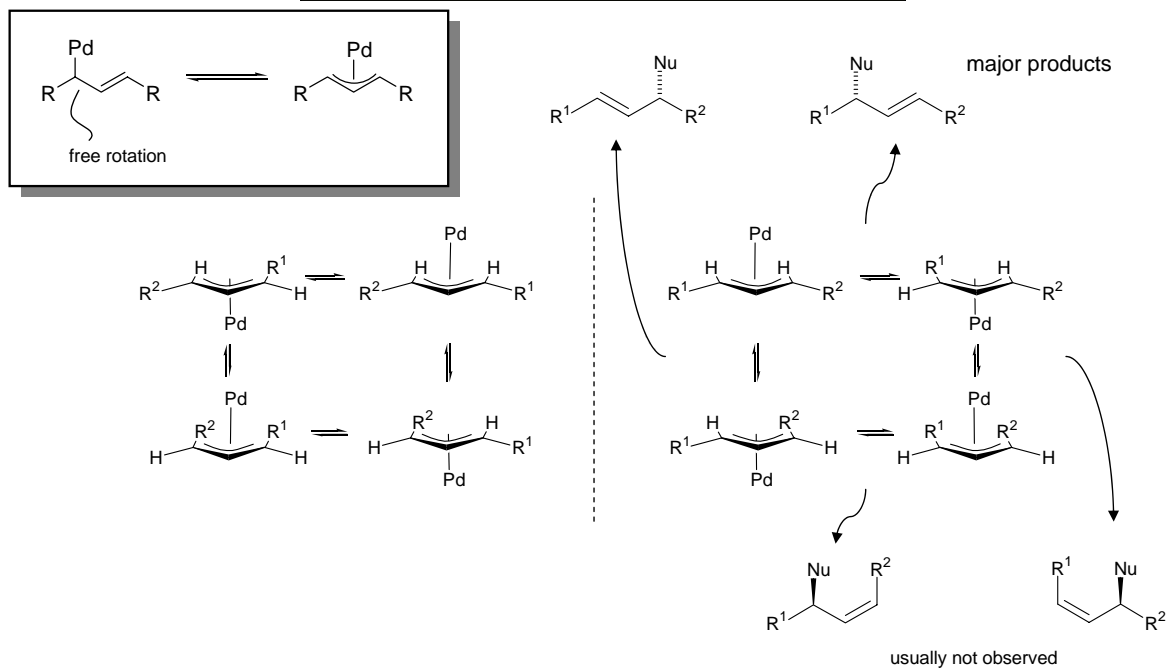
M = Mo, W, Rh,  
Ir, Pd, Pt

$\pi$ -allyl complexes

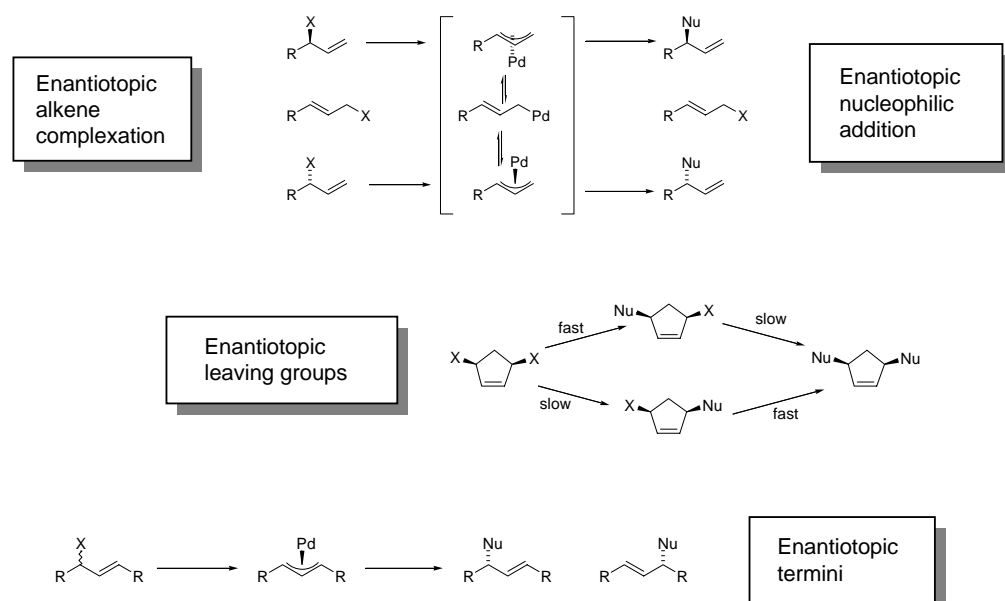
# Reaction Pathways



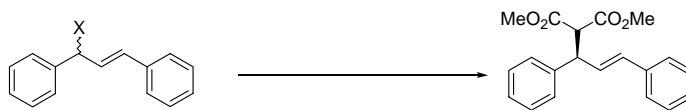
## π-σ-π Isomerization



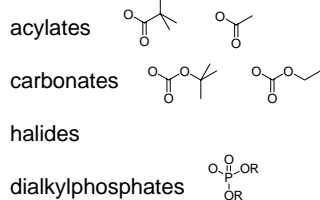
## Types of Asymmetric Induction



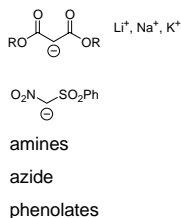
# Enantiotopic Termini



typical leaving groups X:



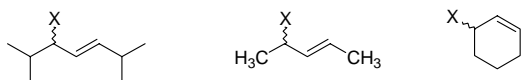
typical nucleophiles:



ee up to 99%

strongly dependent on:

Ligand  
Solvent  
Leaving Group  
Nucleophile



other substrates

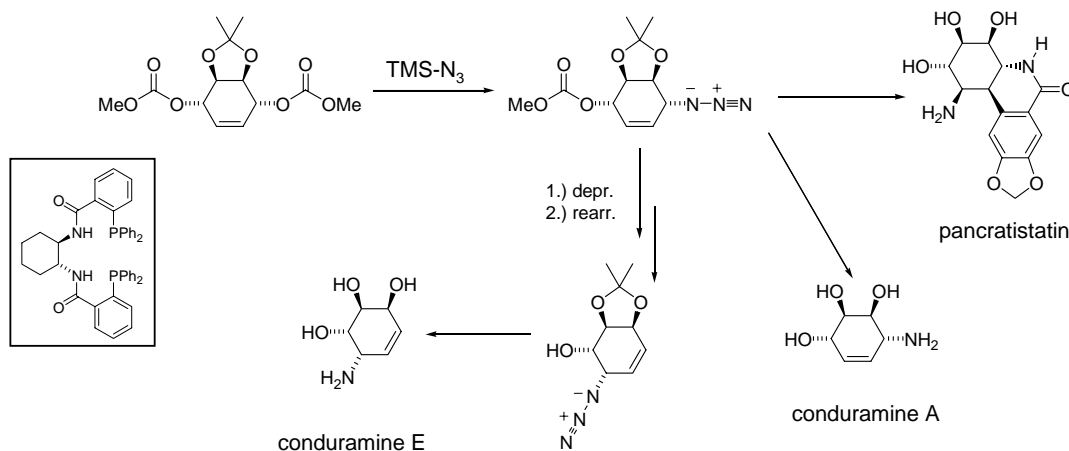
G. Helmchen, A. Pfaltz *Acc. Chem. Res.* **2000**, *33*, 336

B.M. Trost *Acc. Chem. Res.* **1996**, *29*, 355

akbw:\Christoph T\Seminar\S07 EntTermini.ppt

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# Desymmetrization of *meso*-Substrates



B.M. Trost, S.R. Pulley *Chem. Eur. J.* **1995**, *1*, 568

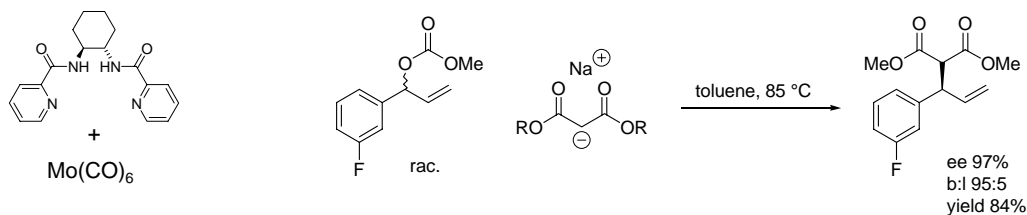
B.M. Trost, S.R. Pulley *J. Am. Chem. Soc.* **1995**, *117*, 10143

B.M. Trost *Acc. Chem. Res.* **1996**, *29*, 355

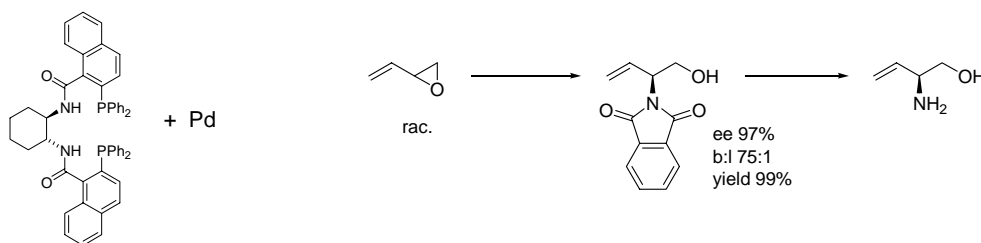
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# Enantioselective Nucleophilic Attack



M. Palucki, J.M Um, D.A. Conlon, N. Yasuda, D.L. Hughes, B. Mao, J. Wang, P.R. Reider *Adv. Synth. Catal.* **2001**, 343, 46



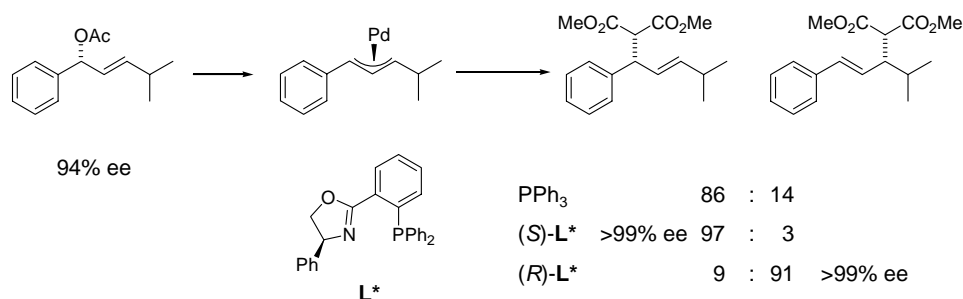
B.M. Trost *Acc. Chem. Res.* **1996**, 29, 355

B.M. Trost, R.C. Bunt, R.C. Lemoine, T.L. Calkins *J. Am. Chem. Soc.* **2000**, 122, 5968

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# Regiocontrol

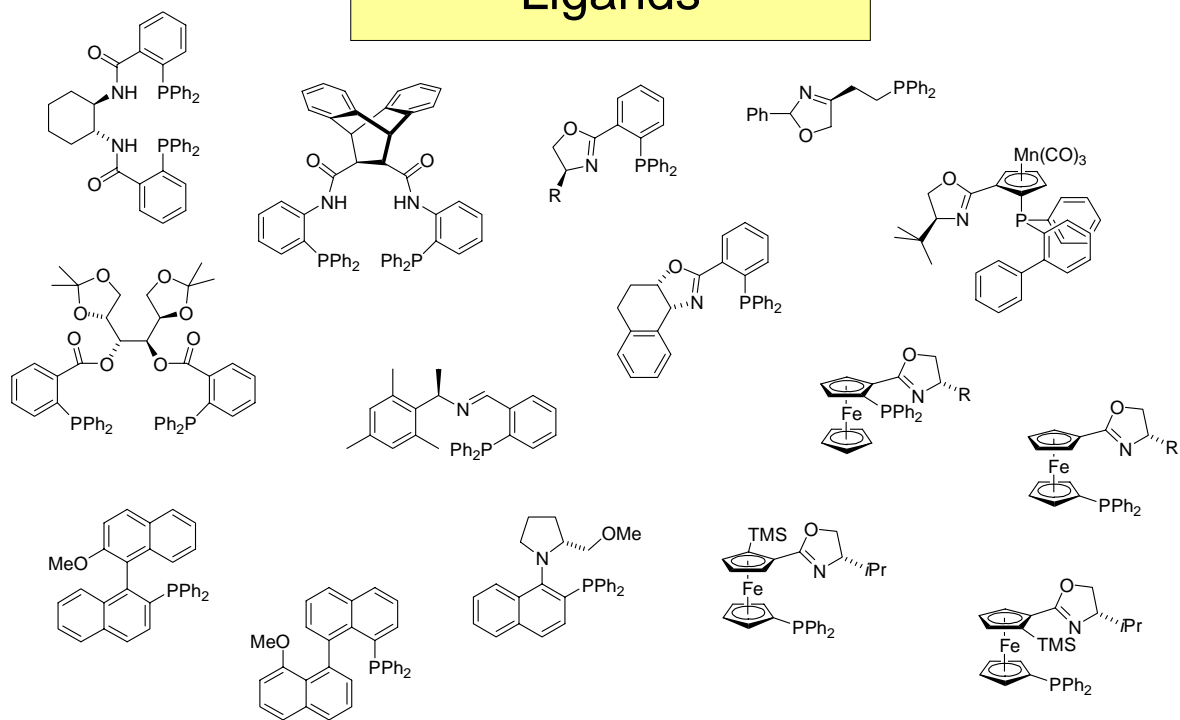


O. Loiseleur, M.C. Elliott, P. von Matt, A. Pfaltz *Helv. Chim. Acta.* **2000**, 83, 2287

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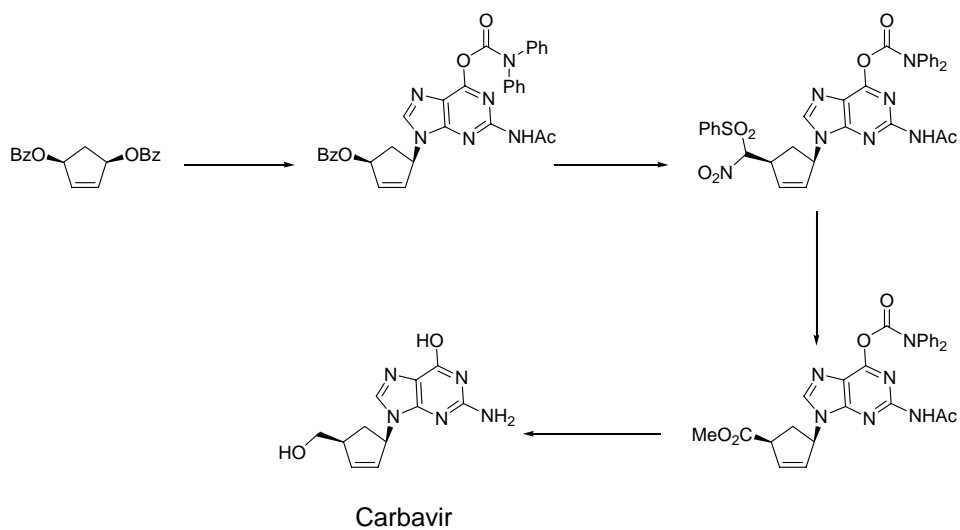
# Ligands



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# Synthesis of Carbanucleosides



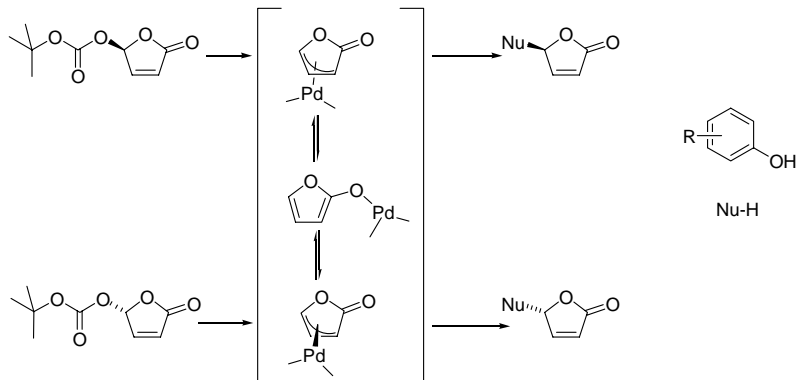
Carbavir

B.M. Trost, R. Madsen, S.D. Guile, B. Brown *J. Am. Chem. Soc.* **2000**, 122, 5947

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# Dynamic Kinetic Asymmetric Transformation

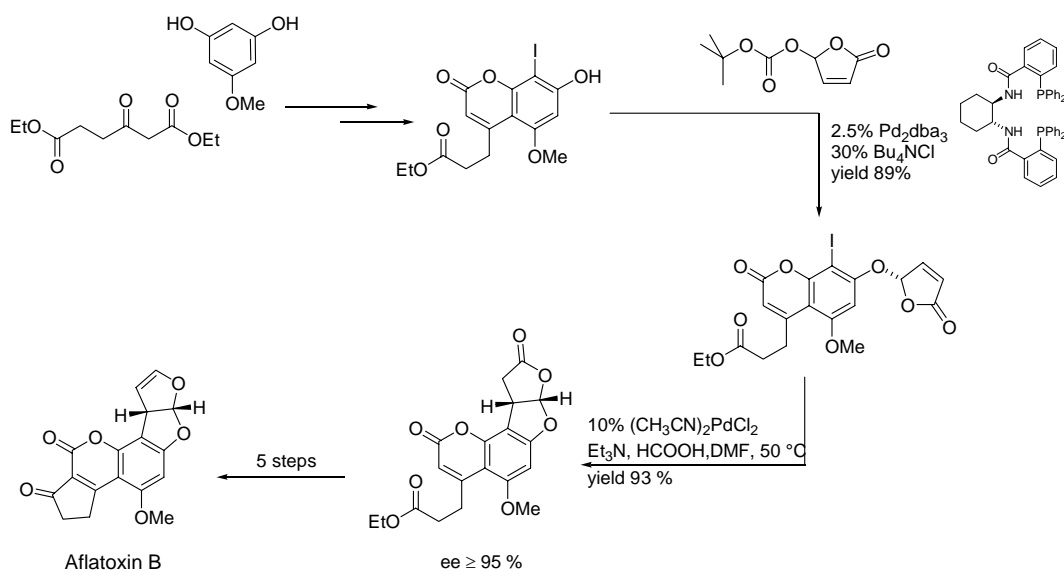


B.M. Trost, F.D. Toste *J. Am. Chem. Soc.* **1999**, *121*, 3543

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# Synthesis of Aflatoxin B

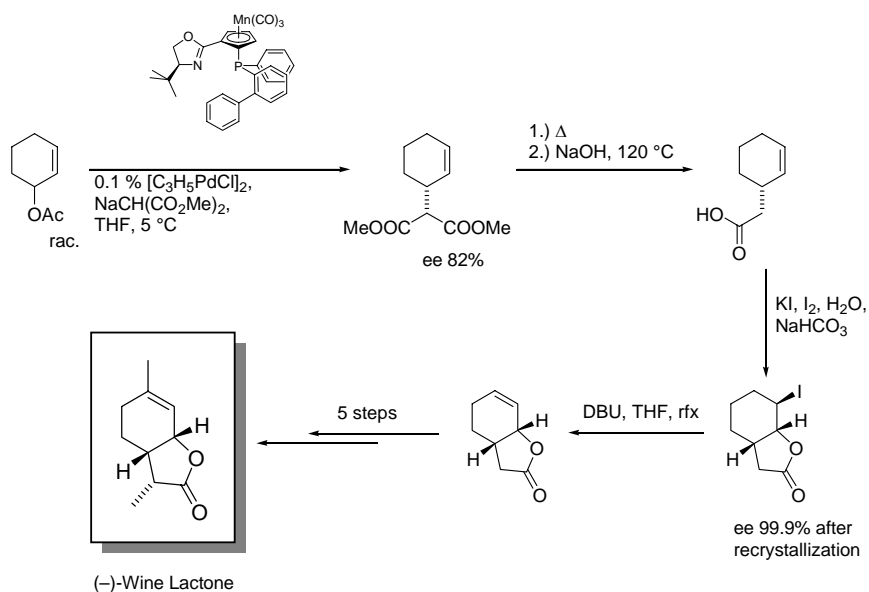


B.M. Trost, F.D. Toste *J. Am. Chem. Soc.* **1999**, *121*, 3543

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## Synthesis of (-)-Wine Lactone

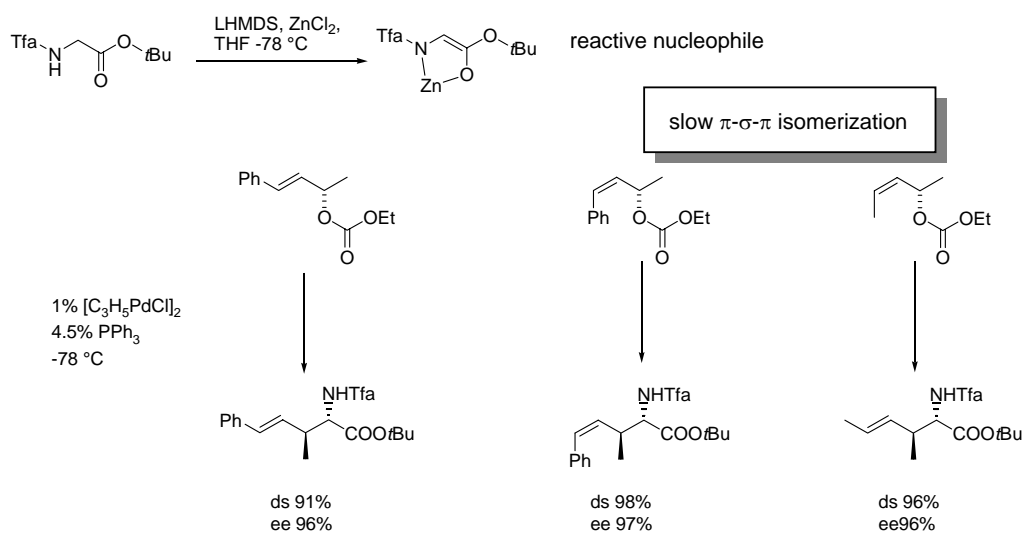


E.J. Bergner, G. Helmchen *Eur. J. Org. Chem.* **2000**, 419

akbw:\Christoph T\Seminar\S15 Wine Lactone.ppt

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## Retention of Double Bond Konfiguration



U. Kazmaier, F.L. Zumpe *Angew. Chem.* **1999**, 111, 1572

U. Kazmaier, F.L. Zumpe *Angew. Chem.* **2000**, 112, 805

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